YUMA MARINE CORPS AIR STATION
YUMA, ARIZONA

Engineering Field Division/Activity:	SOUTHWESTDIV
Major Claimant:	CMC
Size:	3,000 Acres
Funding to Date:	$20,807,000
Estimated Funding to Complete:	$26,957,000
Base Mission:	Supports tactical aircrew combat training for Pacific and Atlantic Fleet Marine Corps Forces Squadrons
Contaminants:	Benzene, JP-5, POLs, toluene, trihalomethane, volatile and semi-volatile organic compounds, xylene

Number of Sites:		**Relative Risk Ranking of Sites:**			
CERCLA:	20	**High:**	8	**Not Evaluated:**	2
RCRA Corrective Action:	0	**Medium:**	3	**Response Complete:**	0
RCRA UST:	5	**Low:**	12	**Total Sites:**	25
Total Sites:	25				

NPL

EXECUTIVE SUMMARY

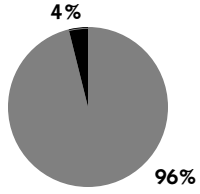
Marine Corps Air Station (MCAS) Yuma occupies approximately 3,000 acres of desert southeast of Yuma, Arizona. The MCAS has been a military air base since the early 1940's. Operations such as aircraft maintenance and servicing and fire fighting training have been the biggest contributors to sources of contamination. Current operations include pollution prevention technologies to prevent further contamination. MCAS Yuma was listed on the NPL in 1990 due to the discovery of the organic solvent TCE in the groundwater, a potable water source. A Federal Facility Agreement (FFA) was signed with EPA and the State of Arizona in FY92.

Most of the land adjacent to MCAS Yuma is agricultural. North of the station, commercial and industrial uses are predominant. Contamination of groundwater is of major concern in wells located within three miles down gradient of the station which are used for drinking water.

A Restoration Advisory Board (RAB) was established in FY95 and includes members from the local community, city and base housing which meets not more than once a month, but no less than every two months. A Community Relations Plan (CRP) was updated in FY94. Information Repositories were established in FY90.

At MCAS Yuma, Site Inspections (SIs) have been completed at twelve sites. Remedial Investigation/Feasibility Study (RI/FS) is underway at 19 sites. Removal actions have been completed at two sites. One Underground Storage Tank (UST) site has a completed Corrective Action Plan (CAP). Implementation of corrective measures is underway at one UST site.

No further action has been recommended at 18 CERCLA sites with the exception of minor surface removal of asbestos containing material. Remedial action is planned for one CERCLA site. CAPs will be completed for two UST sites in FY96 and one in FY97. Corrective measures implementation is planned for four UST sites.



Current Status Of Sites

Studies Underway	24
Cleanups Underway	1
Response Complete	0
TOTALS	25

Through partnering and innovative approaches, the MCAS Yuma Project Team was able to save two to three years and approximately $10 million on the Remedial Investigation phase of the Installation Restoration Program (IRP). The MCAS Yuma Project Team consists of Southwest Division, Naval Facilities Engineering Command, San Diego; MCAS Yuma; Region IX EPA; and the Arizona Department of Environmental Quality. The innovative approach was to conduct a remediation-driven investigation that provides for real-time decision making, interactive review of the data to determine further investigative requirements, and continuation of field activities at the sites without going through delays for workplans and associated review/approval cycles. A bioheap facility was constructed at MCAS Yuma in FY95 to treat contaminated soil generated by the base. This should result in significant cost savings as the hydrocarbon contaminated soil is extremely expensive to dispose of or treat using other methods.

YUMA MCAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Wells within three miles down gradient of the station are used for drinking supply, industrial supply, agricultural irrigation and dewatering. The Yuma area receives little annual rainfall and evapotranspiration rates are far in excess of available precipitation. This, combined with the flat-lying topography and presence of highly permeable surface soils, has produced no significant drainage features on the Yuma Mesa. Drainage in the surrounding area is generally confined to localized depressions and subdued topographic lows. There are some gullies near the southwestern end of the runways, indicating run-off does occur from this area during storms. Because of the large amount of concrete, local flooding sometimes results after a heavy rain. Flood waters may remain for several days in areas such as the flight line and the main portion of the station. MCAS Yuma has installed drywells that are registered with the State of Arizona. These wells are designed to receive storm water from precipitation events and allow it to infiltrate the ground. There are no large surface-water bodies in the immediate vicinity of MCAS Yuma.

NATURAL RESOURCES - Remnants of the original creosote bush-white bursage vegetation community are present at the station. Most of this vegetation, particularly near the main area, is moderately to highly disturbed. Yuma's proximity to the Colorado River makes this area important for migrating birds. No state or federally listed threatened or endangered species are currently known to be present at MCAS Yuma.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments are being conducted on a site by site basis as part of the Remedial Investigation/Feasibility Study (RI/FS). All 20 CERCLA sites were ranked for their relative risk. Six of the CERCLA sites and two of the Underground Storage Tank (UST) sites were ranked as high relative risk in the DOD Relative Risk Ranking System. The high ranking was due to soil contamination for five of the sites and groundwater contamination for three of the sites. The Agency for Toxic Substance and Disease Registry (ATSDR) conducted a site visit in February 1991 for a Public Health Assessment of MCAS Yuma. A report has not yet been issued.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In February 1990, MCAS Yuma was listed on the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 32.24. The listing was due to the presence of the organic solvent TCE in the groundwater which is a drinking water source.

LEGAL AGREEMENTS - In FY92, the Department of the Navy signed a Federal Facility Agreement (FFA) with EPA Region IX and the State of Arizona. The FFA established operable units (OUs); a schedule for future work [i.e., the Remedial Investigation/Feasibility Study (RI/FS) and the Record of Decision (ROD)]; procedures for investigating USTs; and provisions for additional sites identified by a RCRA Facility Assessment (RFA) to be added to the OUs. The RFA was later redesignated as a Federal Facility Agreement Assessment Program (FFAAP). The FFAAP is based on RCRA Corrective Action Program guidance and standards but is incorporated into the RI/FS by including the FFAAP Areas of Concern in a new OU. The OUs were established as follows: OU 1 - Regional Groundwater Unit (Base Wide Groundwater); OU 2 - Surface/Subsurface Soils (Sites 1-18); and OU 3 - Future Installation Restoration Program Sites (SWMU 25).

PARTNERING - The MCAS Yuma Project Team has used an innovative approach for the Remedial Investigation (RI) of Operable Unit (OU) 2 (surface and subsurface soil, Sites 1-18). The Team, comprised of Southwest Division, Naval Facilities Engineering Command, San Diego; MCAS Yuma; Region IX EPA; and the Arizona Department of Environmental Quality, met during January 1994 to March 1994 to develop the approach. The approach consisted of developing expedited, site specific workplans; using on-site mobile laboratories and cone pentromenter testing to provide sampling and on-site analysis for supporting real time decision making; and transmitting the data to the regulators and obtaining concurrence on further investigation sampling. The on-site laboratories provided the data within two days of receipt of the sample. Site-specific workplans were developed and submitted for regulatory review; the regulators provided review comments in two weeks, and the field work started the following week. Two to three years have been saved by eliminating future workplans, review, field work, and report cycles that occur in the typical RI approach. Approximately $10 million was saved by using cone pentromenter rigs to obtain the samples and on-site mobile laboratories for analyses.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee was established in April 1990. Announcement for the formation of the Restoration Advisory Board (RAB) was advertised in the local newspaper in FY94. A RAB open house was held October 1994. Thirteen members from the community participated. Eleven public participants submitted applications and were accepted by the Base Commanding Officer. The first RAB meeting was held on 1 February 1995. Meetings have been held not more than once a month but not less than every two months since then. The RAB includes members from the local community, city and base housing.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was finalized in October 1992 and submitted to regulatory agencies for review. The CRP was updated in FY94 to incorporate regulatory comments. MCAS Yuma prepares and distributes Fact Sheets on a regular basis (1-2 per year).

INFORMATION REPOSITORY - Two Information Repositories were established in April 1990: one at the installation and one at the Yuma County Library. The information from the Administrative Record was placed in the Information Repositories for public access.

YUMA MCAS
HISTORICAL PROGRESS

FY80

Site 11 - In order to remove an immediate danger, a removal action was completed at Site 11, Radiation Pipe, to remove sealed pipes containing low level radioactive dials, gauges, and tubes.

FY85

Sites 1-12 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in September 1985, identified 12 potentially contaminated sites at Marine Corps Air Station (MCAS) Yuma. Of these 12 sites, Sites 7, Fire School, and 9, Southeast Sewage Lagoons, were recommended for Confirmation Studies, equivalent to a Site Inspection (SI) due to the potential for groundwater contamination.

FY86

Site 13. - The Marine Wings Weapons Unit (MWWU) used Building 1585 to mix chemicals for tear gas and napalm weapons and to clean the equipment. Rinseate from these operations went to a septic tank. An investigation of soil and groundwater in this area, completed in October 1985, found halogenated organic compounds and solvents (trihalomethanes, methyl ethyl ketone (MEK), acetone and methylethenylcyclohexane) in the groundwater. When this investigation was completed, the site was still an operating facility; however, after the site was abandoned, it was added to the Installation Restoration Program (IRP) as Site 13.

FY87

Site 14 - Site 14 was added to the IRP. Between 1973 and 1984, water from two oil/water separators, one for a wash rack and one for a hangar, was discharged to the lagoon south of Bldg. 97 (Site 14).

FY88

Sites 7 and 9 - A Confirmation Study, Verification Phase, equivalent to an SI, was completed in April 1988 for Sites 7 and 9. The report found volatile and semivolatile organic compound contamination in soil and groundwater at the Fire School (Site 7) and no volatile organic compounds present in excess of Maximum Contaminant Levels at the Southeast Sewage Lagoons (Site 9). Both sites were recommended for further study.
Sites 1-10 and12-14 - In July 1988, the State of Arizona Department of Environmental Quality requested that 11 of the 12 sites (all except the Radiation Pipe, Site 11) identified in the IAS, as well as Sites 13, MWWU Drain Field, and 14, Lagoon South of Building 97, be investigated in an SI. Since Sites 7 and 9 were investigated in an SI completed in April 1988, no further PA/SI effort was necessary. Site 10, Ordnance Area Disposal Sites, was not investigated at this time because it was an ordnance facility and drilling for samples would be dangerous.

FY90

Sites 1-6, 8 and 12-14 - The SI for Sites 1-6, 8 and 12-14 was completed in October 1990. The report found local hydrocarbon contamination and elevated concentrations of priority pollutant metals at the Flight Line (Site 1); minor hydrocarbon contamination in the shallow soil at the Shops Area Z (Site 2); petroleum hydrocarbon contamination above state action levels and metals concentrations above background levels in soils at the Auto Hobby Shop (Site 3); metals concentrations and sulfates above background levels at the Radar Hill Disposal Area (Site 4); metals concentrations above state action levels at the Old 2nd LAAMBN Compound (Site 5); arsenic and barium concentrations above state action levels at the First Sewage Treatment Lagoon (Site 6); metals (aluminum, antimony, arsenic, beryllium, cobalt, lead and vanadium) concentrations above state action levels at the Southeast Station Landfill (Site 8); metals concentrations above state action levels at the Tear Gas Burial Site (Site 12); minor hydrocarbon contamination and metals concentrations above state action levels at the Drain Field Former Building 1585 (Site 13); and lead, manganese, and petroleum hydrocarbon concentrations above state action levels at the Lagoon Building 97 (Site 14).

FY91

Sites 15-17 - Three new sites were recommended by the State of Arizona to be included in the Installation Restoration (IR) Program in 1991. Leaky Hazardous Waste Underground Storage Tanks (USTs) #363 and #364 (Site 15), consisting of two USTs installed in 1943 and used for storage of waste solvents, thinners, paint wastes, degreasing and stripping residues, and petroleum products, failed volumetric tank tests in 1987 and were removed. Leaky Hazardous Waste USTs, Bldg. 230 #2 and #4 (Site 16), consisting of two USTs installed in 1979 and used for storage of waste solvents, paint strippers, thinners, MEK, degreasing agents, epoxy catalysts and thinners, isopropyl alcohol, and aliphatic thinners, failed tank pressure tests in 1988/89 and were removed. Leaky Hazardous Waste UST Bldg. 1708 #3 (Site 17), consisting of a tank installed in 1985 and used for storage of waste decontamination solutions (triphosphate detergents/oily residue), failed a volumetric test in 1988 and was removed.
Site 18 - One additional site was identified in 1991 by the Department of the Navy as a result of visible staining in a drum storage area. The Rogue Drum Storage Area (Site 18) had been used as the collection point for all drums on the installation. These drums contained various materials and wastes such as petroleum products, solvents and Investigation-Derived Wastes (IDW).
SWMU 25 - A Visual Site Inspection was voluntarily completed by the Department of the Navy in September 1991 and identified 198 Solid Waste Management Units (SWMUs) at MCAS Yuma.

FY93

Site 18 - A removal action was completed at Site 18, Drum Storage Area, to remove 92 drums of investigative derived waste resulting from the installation of groundwater monitoring wells.
SWMU 25 - 198 SWMUs identified during the 1991 Visual Site Inspection were revisited and narrowed down to 25 SWMUs which are being studied under the IR Program as SWMU 25.
USTs 2 and 4 - An Initial Site Characterization (ISC) was completed.

FY94

UST 1 - An ISC was completed to determine the extent of contamination. During the Site Characterization, a pilot treatability study got underway to remove the free product from the groundwater. Three fuel recovery systems were installed at the fuel farm and the motor transportation pool area and free floating product has been removed. It is planned that the free product-contaminated groundwater at the Fuel Farm will continue to undergo a pump-and-treat operation to remove the free product until FY97.

PROGRESS DURING FISCAL YEAR 1995

FY95

OU 1 (Site 19) - The draft Remedial Investigation (RI) Report was submitted to the regulators for review in April. The report identified several areas of contamination that required further investigation. The project team met in May to jointly develop an Operating Unit (OU) 1 field sampling plan addendum that would fill the data gaps. By using innovative field screening techniques, the plume containing the organic solvent TCE was fully delineated by September.
OU 2 (Sites 1-18) - The draft RI Report was submitted to the regulators in January 1995 and recommended No Further Action (NFA) on all eighteen sites. After negotiating with the Project Team over six months, all 18 sites have been recommended for NFA with the exception of minor surface removal actions of asbestos containing material.
UST 1 - A Corrective Action Plan (CAP) was completed. A treatability study was ongoing to examine the air sparging method for treating dissolved solids contamination at the Fuel Farm and Motor Transport Pool.
UST 5 - Corrective Measure (ground water treatment) was initiated and is planned for completion in FY99.

YUMA MCAS
PLANS FOR FISCAL YEARS 1996 AND 1997

FY96

OUs 1 and 2 (Sites 1-19) - Remedial Investigation/Feasibility Studies (RI/FSs) and draft Records of Decision (RODs) will be complete.
OU 1 (Site 19) - Remedial Design (RD) will be complete for Regional Groundwater. Remedial Action (RA) consisting of a pump and treat using vapor extraction will be initiated for Regional Groundwater and is planned for completion in FY00.
USTs 2 and 4 - CAPs will be completed.
UST 3 - An Initial Site Characterization will be completed.
UST 4 - Corrective Measure will be initiated and is planned for completion in FY98.
OU 3 (SWMU 25) - A Final Preliminary Records Search/Visual Site Inspection (PR/VSI) and a Federal Facility Assessment Report will be completed.

FY97

UST 3 - A CAP will be completed.
USTs 1 and 2 - Corrective Measures will be implemented.
UST 3 - Corrective Measures will be initiated and are planned for completion in FY99.

PROGRESS AND PLANS

CERCLA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
PA	12	1						
SI	12			1				
RI/FS			19		1			
RD			5			1		
RA							2	4
IRA	2(2)						1(1)	3(3)
RC				14			2	4
Cumulative Response Complete				70%			80%	100%

UST	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
ISC	3		1					
INV								
CAP		1	2	1				
DES								
IMP				1		1		3
IRA						1(1)		4(4)
RC								5
Cumulative Response Complete								100%